REMARKS

Claims 1-8, 12-17, 20-22 and 24-30 are still pending in this application. Reconsideration of the application is earnestly requested.

The Office action summary does not indicate whether the drawings filed have been accepted or objected to by the Examiner. The drawings are formal in nature and Applicant requests that the next communication indicate whether or not these drawings have been accepted.

The Office action has rejected claims 1-11, and 13-29 under 35 U.S.C. 103 as being unpatentable over Intel (IA-32® Architecture Software Developer's Manual, Volumes 1-2, 2002; "*Intel*") and *Killian et al.* (U.S. Patent No. 5,420,992), "*Killian*." Although the Examiner's arguments have been carefully considered, Applicant respectfully traverses this rejection as explained below.

The Present Invention

The claims require common subcircuitry to perform sign extensions not only on an immediate field of a non-branch instruction, but also to perform sign extensions on the same immediate field of branch instructions. The advantage is pointed out in the specification:

"Because both branch and non-branch operations perform a sign extended operation on the immediate field value, the same subcircuit can be reused for both types of operations. Using the same subcircuitry allows efficient use of hardware resources and reduced processor core sizes." (Page 12, lines 24-27.)

The Cited Art Distinguished

Figure 3C of *Killian* shows at the top right that subcircuitry 85 (and its inputs) is used to calculate a branch target address which includes performing a sign extension of a 16-bit immediate field in the branch instruction. This subcircuitry is entirely separate from circuitry at the top left of the figure. Circuitry at the top left includes an adder 77, a base address, and a sign extension circuit 78 for the purposes of computing load and store instructions. Thus, circuitry at the top left for performing a sign extension of an immediate field for a non-branch instruction is entirely separate from circuitry at the top

right for performing a sign extension of an immediate field in a branch instruction. The two different subcircuits are not the same circuits—they are not common.

In the "Response to Arguments" of the recent final Office action beginning at page 19, the action states that the entire circuit shown in Figure 3C is the claimed "common subcircuitry" of claim 1. Applicant disagrees that this entire circuit performs sign extensions on non-branch instructions as well as sign extensions upon branch instructions. It is clear that only the subcircuitry in the top left of the page operates on the non-branch instructions and that the circuitry in the top right of the page operates upon the branch instructions. When the Office action takes the position that the entire circuit of Figure 3C is performing sign extensions on branch and non-branch instructions, this conclusion leads to one possible odd interpretation that multiplexer 85 (for example) in the lower left portion of the figure is somehow involved in performing sign extensions. Of course, it is not.

For these reasons, Applicant asserts that the independent claims (before amendment) specifically require common subcircuitry and that *Killian* teaches away by requiring two different subcircuits for two different types of instructions thus requiring more space and more hardware.

Nevertheless, Applicant understands that the Examiner is interpreting claim 1 differently. The independent claims have been amended to make clear that the "common subcircuitry" is the same circuitry used for branch and non-branch instructions. *Killian* is different because it shows different subcircuitry used for the branch and nonbranch instructions. It cannot be said that the entire circuit of Figure 3C is being used to perform a sign extension. These amendments add no new matter and do not require further consideration or search because they clarify limitations already present in the claims.

Claim 1

Claim 1 now specifically requires:

> common subcircuitry operable to perform sign extensions of an immediate field in non-branch instructions and to perform sign extensions of said immediate field in branch instructions to calculate a target address for branch instructions, wherein said common subcircuitry operating on said non-branch instructions is the same subcircuitry operating upon said branch instructions.

Since dependent claims 2-8, 12 and 13 depend from the independent claim 1, it is respectfully submitted that they are each patentable over the art of record for at least the same reasons as set forth above with respect to the independent claim 1.

Claim 14

Claim 14 now specifically requires:

> common subcircuitry that performs a sign extension of an immediate field associated with one or more branch instructions and that performs a sign extension of said immediate field associated with one or more non-branch instructions, wherein said common subcircuitry operating on said non-branch instructions is the same subcircuitry operating upon said branch instructions, wherein the sign extension of the immediate field associated with one or more branch instructions is performed to determine a branch target address.

Since dependent claims 15-17 depend from the independent claim 14, it is respectfully submitted that they are each patentable over the art of record for at least the same reasons as set forth above with respect to the independent claim 14.

Claims 20 and 27

Claim 20 specifically requires:

> calculating a branch target address by determining a sign extended value of the immediate value, wherein the branch target address is determined by using common subcircuitry, the common subcircuitry operable to calculate a byte-aligned address, wherein the common subcircuitry is also operable to determine a sign extended value of said immediate field of non-branch instructions.

Since dependent claims 21, 22 and 24-26 depend from the independent claim 20, it is respectfully submitted that they are each patentable over the art of record for at least the same reasons as set forth above with respect to the independent claim 20.

Claim 27 includes the same limitations as claim 20 and is believed patentable for the same reasons. Since dependent claims 28-30 depend from the independent claim 27, it is respectfully submitted that they are each patentable over the art of record for at least the same reasons as set forth above with respect to the independent claim 27.

For these reasons, it is respectfully requested that the rejection of the claims be withdrawn. Reconsideration of this application and issuance of a Notice of Allowance at an early date are respectfully requested. If the Examiner believes a telephone conference would in any way expedite prosecution, please do not hesitate to telephone the undersigned at (612) 252-3330.

Respectfully submitted,
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